National Climatic Data Center

DATA DOCUMENTATION

FOR

DATASET 9659 (DSI-9659)

SYNOPTIC MET DATA OFF. HYDROLOGY FORMAT

January 6, 2004

National Climatic Data Center
151 Patton Ave.
Asheville, NC 28801-5001 USA

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1. Abstract: The National Weather Service (NWS), National Oceanic and Atmospheric Administration (NOAA) has the responsibility for the river and flood warning service in the United States. The Hydrologic Research Laboratory (HRL), Office of Hydrology (O/H), NWS, NOAA, has developed and is now assisting in the implementation of a new National Weather Service River Forecast System (NWSRFS). The NSWRFS is a system of hydrologic models together with a data management subsystem.

Several years of hydrometeorological data are generally required for calibrating hydrologic models. Model calibration of the NWSRFS is being done in the field by the NWS River Forecast Centers (RFC's). River forecasts are operationally issued for approximately 2,500 locations in the United States. To adapt the NWSRFS models to all these basins requires an extensive data base. Most climatic and hydrologic data have been available either in published books or on cards or tape with a format not best suited for use in handling or processing by computer.

All records available for each data set at NCDC have been transferred to the O/H format. The period of record for each data set begins in January 1948. The tapes are periodically brought up to date. All non-integer characters have been eliminated.

Approximately 3,000 hourly precipitation station records are included on the hourly data tapes. These include records on the hourly data tapes. These include records from instruments using analog recorders (Universal gauges) and those recording on digital paper tapes (Fischer-Porter gauges). The hourly O/H format data tapes were created from NCDC's master tape file-Card Deck 488 images. The quality of the data is considered to be very high.

All hourly records for a station are listed in chronological order. Each record on the tape consists of 2,400 characters representing 1 month of data. This permits approximately 650 station years of data per tape. All NCDC-archived hourly data for each state are in the O/H format tape set.

There are over 10,000 stations reporting daily climatological data. These include stations known as cooperative stations, river stations, evaporation stations, Weather Service stations (first- and second-order stations), and Federal Aviation Administration (FAA) stations.

Most of the meteorological data contained on the synoptic meteorological data tapes come from the hourly observations taken at first-order NWS stations. Records from other weather observing stations (such as second-order NWS stations, FAA stations, and some military weather observing stations) are processed and computerized by NCDC. Hourly records from these stations were obtained from the NCDC files-WBAN Hourly Surface Observation Card Deck 144. Once a day measurements from these stations are taken from NCDC files-WBAN Summary of Day Deck 345.

Daily total radiation and total sunshine records for the national network of radiation stations have been included on the O/H format synoptic meteorological tapes. These were obtained form the NCDC files-Solar Radiation Summary of Day Card Deck 480.

Each record on the tapes contains one-half of the data for 1 month (3,360

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characters). There are approximately 225 stations years of data per tape and 36 tapes are sufficient for the entire United States for the period 1948 through 1976. These data are in one set for the entire country and not separated by state.

In addition to the hydrometeorological data on the O/H format tapes, other records are added to complete the data base required for hydrologic modeling. The U.S. Geological Survey (USGS), Department of the Interior, has provided a set of tapes (12) listing all daily stream flow records for the United States. These are for the entire length of record for all stations. The Soil Conservations Service (SCS), Department of Agriculture, has provided complete records of all snow survey data for the Western United States.

Although the O/H format tapes were designed specifically for the use in implementing NWSRFS and for calibration of hydrologic models, use for other purposes was kept in mind. For this reason, most data available on the NCDC files were placed on the O/H format tapes. The tapes provide the most complete, readily accessible file of hydrometeorological data for the United States.

2. Element Names and Definitions:

Element	**Field Length (Characters)**	**Characters/ Month**	**Record Position**
Station Number	6	6	1-6
Date	6	6	7-12
Local Standard Time (LST)	2	2	13-14
Record (1) (First record of month)	1	1	15-15
Ceiling Height (3-hrly)	3	744	16-759
Visibility (3-hrly)	3	744	760-1503
Wind Speed (3-hrly)	3	744	1504-2247
Wind Direction (3-hrly)	2	496	2248-2743
Total Sky Cover (3-hrly)	1	248	2744-2991
Thunderstorm (3-hrly)	1	248	2992-3239
Blanks	121	121	3240-3360
Station Number	6	6	1-6
Date (Year, Month)	6	6	7-12
LST	2	2	13-14
Record of Month (2)	1	1	15-15
Dry Bulb Temperature (3-hrly)	3	744	16-759
Dew Point Temperature (3-hrly)	3	744	760-1503
Precipitation Type (3-hrly)	1	248	1504-1751
Station Pressure (6-hrly)	4	496	1752-2247
MAX Temperature (Daily)	3	93	2248-2340
MIN Temperature (Daily)	3	93	2341-2443
Precipitation Amount (Daily)	4	124	2444-2557
Snowfall Amount (Daily)	3	93	2558-2650
Snow Depth (Daily)	3	93	2651-2743
Water Equivalent (Daily)	4	124	2744-2867
Max Wind Type (Daily)	1	31	2868-2898
Max Wind Speed (Daily)	3	93	2899-2991

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Max Wind Direction (Daily)	2	62	2992-3053
Total Sunshine (Daily)	3	93	3054-3146
Total Radiation (Daily) (Hemispheric Solar)	4	124	3147-3270
Blanks	90	90	3271-3360

3. Start Date: 19400101

4. Stop Date: 19761231

5. Coverage:

a. Southernmost Latitude: 25.0S
b. Northernmost Latitude: 50.0N
c. Westernmost Longitude: -125.0W
d. Easternmost Longitude: -65.0E

6. How to Order Data:

Ask NCDC's Climate Services about the cost of obtaining this data set.
Phone: 828-271-4800
FAX: 828-271-4876
E-mail: **NCDC.Orders@noaa.gov**

7. Archiving Data Center:

Archive Branch
National Climatic Data Center
151 Patton Avenue
Asheville, NC 28801

8. Technical Contact:

National Climatic Data Center
151 Patton Avenue
Asheville, NC 28801

9. Known Uncorrected Problems: None.

10. Quality Statement: Daily observation data from October 1963 on are considered of high quality. Prior to 1963, some errors were introduced, since data from this period were originally stored on FOSDIC (similar to microfilm). Dust particles on the FOSDIC introduced some errors during conversion to magnetic tape.

11. Essential Companion Datasets:

12. References:

Curtis, David C., and Smith, George F.: The National Weather Service River Forecast System-Update 1976." Minutes of International Seminar on Organization and Operation of Hydrological Services in Conjunction with the Fifth Session of the WMO Commission for Hydrology, Ottawa, Canada, July 15-

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16, 1976.

Monro, John C., and Anderson, Eric A., May 1974: National Weather Service River Forecasting System. Journal of the Hydraulics Division, ASCE, Vol. 100, No. HY5, pp. 621-630.

Peck, Eugene L., June 1976: Catchment modeling and initial parameter estimation for the National Weather Service River Forecast System. NOAA Technical Memorandum NWS HYDRO-31, U.S. Dept. of Commerce, Silver Spring MD., 80 pp.